



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

October 12, 2005

MEMORANDUM

SUBJECT: Response to National Remedy Review Board Recommendations for the South El Monte OU of the San Gabriel Valley Superfund Sites, Area 1

FROM: Keith Takata, Director
Superfund Division, EPA Region 9

TO: Jo Ann Griffith, Chair
National Remedy Review Board
Office of Solid Waste and Emergency Response

Purpose

This provides Region 9's response to the advisory recommendations of the National Remedy Review Board (NRRB) regarding the proposed additional remedial actions for the South El Monte OU (SEMOU) of the San Gabriel Valley Superfund Sites, Area 1. These recommendations were provided in your memorandum to me.

Overview of the Proposed Actions

Subsequent to the completion of the SEMOU 2000 Interim Record of Decision (IROD), perchlorate and 1,4-dioxane have been detected in the South El Monte OU at concentrations exceeding the State of California public health goal (PHG). Because of these detections, Region 9 had proposed to treat for perchlorate in the intermediate zone at the northwest half of the SEMOU and to treat for 1,4-dioxane in the shallow zone in the southern portion of the SEMOU, in addition to the VOC remedy documented in the IROD.

Since Region 9's proposal to implement additional remedial actions, as presented to the NRRB, the PHG for perchlorate has been changed from 4 micrograms per liter (ug/L) to 6 ug/L by the State of California Department of Health Services (DHS). In addition, Region 9 has had successful discussions with DHS regarding blending intermediate zone groundwater in the northwest half of the SEMOU to reduce perchlorate concentrations to below California's PHG. In light of this higher PHG for perchlorate and Region 9's discussions with DHS regarding blending of perchlorate-contaminated groundwater, as well as the NRRB's recommendations/comments, Region 9 has conducted additional evaluations as described in our responses below.

Based on these evaluations, Region 9's proposed additional remedial actions are currently limited to blending and/or treatment of perchlorate-contaminated groundwater in the intermediate zone of the northwest half of the SEMOU migrating towards water purveyor wells. This proposed blending/treatment will be addressed in an Explanation of Significant Differences (ESD) to the SEMOU IROD. The need for containment and treatment for 1,4-dioxane in the shallow zone at the southern portion of the SEMOU is being further evaluated.

Region 9's responses to the NRRB's recommendations/comments should be viewed in this context and are summarized below.

NRRB Comment # 1

- Based on the information presented to the board, the region is proposing to amend the interim Record of Decision (IROD) for the South El Monte OU in order to address implementation issues presented by the detection of perchlorate above California state action levels in the production wells to be used to implement the VOC remedy. The board has the following concerns and/or comments in regard to this proposal.
 - The State action levels for perchlorate and 1,4-dioxane are not ARARs.¹ However, the region has informed the board that, the water purveyors, as a practical matter, will not operate the production wells selected for the IROD remedy without treatment for perchlorate due to the provisions of Cal. H&SC116455 and State DHS Policy Memo 97-005.
 - Further, the exceedances of the action levels for these two substances were marginal and not uniformly present, with no discernable trends. The region's approach could lead to an overly conservative estimation of the risks posed by perchlorate and dioxane and thus overly costly response actions.

As a result of the above, the board believes that the current documentation should be supplemented because based on the risk information presented on perchlorate and 1,4 dioxane, the risks posed by those chemicals, standing alone, may not lead to a conclusion that a response action is advisable. Thus, even though the state action level for perchlorate has been exceeded at some particular wells triggering state requirements applicable to water purveyors, the board recommends that the region consider a larger data set to further characterize the risks, estimate concentration trends in the wells to demonstrate that these are ongoing and not transient exceedances, and further document the need to treat these contaminants to protect human health and the environment.

Region 9 Response

A revised Supplemental Risk Assessment (SRA) was performed based on 95% upper-confidence-limit (UCL) concentrations for 1,4-dioxane and perchlorate. The revised SRA included the most recent 1,4-dioxane and perchlorate data available (generally through February 2004). The revised SRA approach is less conservative than the initial SRA approach which was based on maximum concentrations of 1,4-dioxane and perchlorate. The revised SRA (attached) indicates that risk to human health may be present from 1,4-dioxane and perchlorate in shallow zone groundwater if groundwater is produced in the future from the shallow zone. The revised SRA also indicates that risk to human health may be present from perchlorate in intermediate zone groundwater.

Concentration versus time charts for perchlorate and 1,4-dioxane had not been previously developed due to a limited data set. However, additional perchlorate and 1,4-dioxane data have recently been obtained, thus providing sufficient data for a meaningful evaluation of these two contaminants. Concentration versus time charts for perchlorate in intermediate zone groundwater and 1,4-dioxane in shallow zone groundwater have been developed to assess the persistence of and potential trends in the concentrations of these contaminants. These charts, which are attached for reference, show the following:

- *The consistent presence of perchlorate in the intermediate zone and no discernable trend in perchlorate concentrations.*
- *A decrease in 1,4-dioxane concentrations during operation of the shallow barrier project (SBP) in the southern SEMOU. The nature of and trends in 1,4-dioxane in the shallow zone prior to the start of the SBP can not be assessed due to a lack of useful data (samples for 1,4-dioxane analyses were never collected or laboratory reporting limits exceeded the California PHG for 1,4-dioxane).*
- *Concentration versus time charts for 1,4-dioxane in the northern portion of the shallow zone could not be developed because of the limited amount of data.*

The charts demonstrate that there are ongoing, and not transient, exceedances of perchlorate in the intermediate zone of the SEMOU (e.g., at Monterey Park Well 12), and further support the need to reduce perchlorate concentrations to protect human health and the environment.

NRRB Comment # 2

- The board notes that the region has begun to identify sources and parties responsible for the perchlorate contamination in ground water. The board encourages further action in this regard, including investigation of potential sources and parties outside of this OU, as may be suggested by the presence of potentially higher perchlorate contamination levels at depth.

Region 9 Response

Region 9 continues to expend significant time, money, and effort to locate a perchlorate source for the SEMOU and has an assigned internal civil investigator for the perchlorate investigation. As part of the investigation, Region 9 has hired a contractor to assist in identifying parties who may have contributed to the perchlorate contamination, prepare profiles of industries and businesses which are currently operating or have operated in the past, and which may reasonably be expected to use or have used perchlorate containing compounds. CERCLA 104(e) request for information letters were recently sent out to two parties, which may have used perchlorate in the past. Additional 104(e) letters will be sent to other parties in the near future, and Region 9 will review and consolidate the parties' responses and address them appropriately on a case by case basis.

NRRB Comment # 3

- The region's cleanup proposal would pump and treat ground water in the shallow aquifer to remove 1,4-dioxane contamination and prevent the plume from spreading elsewhere in the basin. If the region is reasonably confident that 1,4-dioxane contamination sources are under control, it can be expected that contamination levels will decrease over time, with no additional action. Given this, as well as the board's concerns about the region's risk calculations (see #1 above), the board questions whether treating the plume is cost effective. The board recommends that the region model the fate and transport of 1,4-dioxane at the site to estimate the potential impact on treatment at Whittier Narrows and to determine with more certainty what action, if any, is necessary.

Region 9 Response

Region 9 is currently performing fate and transport modeling of 1,4-dioxane contamination in the shallow zone of the SEMOU. The modeling will assess 1) the probability of elevated concentrations of 1,4-dioxane in the shallow aquifer in the SEMOU migrating to the Whittier Narrows OU in the future and impacting the Whittier Narrows OU remedy extraction wells, and 2) the potential for 1,4-dioxane in shallow aquifer source areas in the northern portion of the SEMOU to migrate into the intermediate aquifer and affect extraction wells proposed as components of the SEMOU interim remedial action. Based on the results of the modeling, EPA will determine if containment of 1,4-dioxane in the shallow zone is necessary.

NRRB Comment # 4

- Based on the information presented in the board package, the cost of treating perchlorate and 1,4-dioxane appears to be disproportionate to the risks posed by these contaminants. The board recommends that the region consider other alternatives, such as:
 - Blending water from multiple supply wells to reliably keep perchlorate and 1,4-dioxane below the California action levels,
 - Treating a portion of the influent from a contaminated supply well so that the treated volume can be blended with the untreated volume, resulting in a blended effluent that is below the California action levels for perchlorate and 1,4-dioxane, thereby reducing treatment cost,
 - Using a combination of water supply wells and new extraction wells to minimize the need to treat for these contaminants in the public water supply,
 - Evaluating in-situ treatments for all contaminants to minimize costs associated with meeting additional requirements for drinking water, and
 - Evaluating emerging technologies.

If the region has evaluated and dismissed these options, the rationale should be documented in the decision documents.

Region 9 Response

An evaluation of blending of groundwater to reduce perchlorate concentrations to below the State of California PHG of 6 ug/L was performed at three SEMOU water purveyors' facilities where the perchlorate contamination is at or above the California PHG. A blending goal for perchlorate of 4 ug/L (2/3 of the current perchlorate PHG of 6 ug/L) was used to provide a margin of safety, given uncertainties associated with wellhead concentrations of contaminants.

Based on the available data and assumptions used for this evaluation, groundwater from two of the three facilities currently impacted by perchlorate could be potentially blended to yield a perchlorate concentration below the blending goal of 4 ug/L. In addition, perchlorate concentrations at one of these two facilities have recently decreased to below 4 ug/L, and may not require blending if these lower levels are maintained.

For the third facility impacted by perchlorate, there is no practical blending scenario that will yield a perchlorate concentration below the blending goal of 4 ug/L while maintaining the extraction rate required by the interim remedial action.

In-situ treatment for perchlorate and 1,4-dioxane are not being considered because the following requirements and physical conditions at the SEMOU would make this type of remediation cost-ineffective: the small spacing required for in-situ injection points (approximately 10 to 20 feet between points) over the large aerial extent of shallow or intermediate zone groundwater with perchlorate or 1,4-dioxane exceeding CA State PHGs, the depth to groundwater, and the relatively high urban density in some parts of the SEMOU.

Permeable Reactive Barriers (PRBs) were not considered as an in-situ treatment technology because they have been shown to be ineffective in treating 1,4-dioxane and are only now being pilot-tested as an in-situ treatment technology for perchlorate.

NRRB Comment # 5

- State policies discouraging the blending of water appear overly conservative in this instance. Based on the available ground water data, blending may enable the achievement of the perchlorate levels contained in the state policy. The board recommends that the region more fully explore this option with the state.

Region 9 Response

Region 9 has worked closely with DHS over the last two years on DHS's policy discouraging blending of groundwater. Region 9 has requested DHS to reevaluate its position on this issue and allow blending of intermediate zone groundwater containing perchlorate at the SEMOU for the following reasons: 1) perchlorate levels at the SEMOU are relatively low (near the California PHG); and 2) the cost estimates to treat these low levels of perchlorate contamination are extremely high. DHS has recently indicated they will allow blending of groundwater at water purveyors' facilities that have lower levels of perchlorate (at or slightly higher than the California PHG) in the VOC treated water, and could attain a perchlorate concentration of approximately 4 ug/L in the blended groundwater.

As described above, Region 9 has performed evaluations of blending of groundwater to reduce perchlorate concentrations at three water purveyors' facilities. A blending plan to reduce perchlorate concentrations at one of these three facilities is currently being reviewed by DHS.

NRRB Comment # 6

- The board is concerned that the region evaluated a limited range of alternatives to address this operable unit. Other than the previously selected remedy, which the region has already determined needs updating, the board was presented with two alternatives. The board believes that even with taking into account that portions of the original remedy are in place, there may be other, more cost effective alternatives that should be evaluated. The board recommends that the region evaluate additional alternatives that include (singularly and/or combinations as appropriate) use of water supply wells with treatment, use of extraction wells with treatment and re-injection, temporary non-use of certain water supply wells, or blending water from water supply wells, until clean-up goals are met. The board also recommends that the region consider phasing the implementation of the remedy with the most contaminated wells or areas being addressed first. Future actions could be adjusted based on the results of the earlier phases (i.e., MNA may become more viable as part of a containment remedy in the future). By evaluating a range of alternatives, the potential cost impact of the state's H & SC Section 116455 and state DHS Policy Memo 97-005 can be clearly determined.

Region 9 Response

A remedial action using newly constructed extraction wells with treatment and re-injection has been evaluated. Because the treated water would not be used as a public drinking water supply, DHS Policy Memo 97-005 would not apply and redundant VOC treatment would not be necessary. However, the cost of this action was estimated to be higher than other evaluated actions due to the construction costs of all new facilities and high operations and maintenance costs that are generally associated with re-injection operations.

Temporary non-use of certain water supply wells and phasing the implementation of the remedy would allow intermediate zone contamination to move farther downgradient from the Central (primary) Containment Area, potentially affecting additional water supply wells in the future. Therefore, because impacts to additional public supply wells are not acceptable, Region 9 is not considering these options.

NRRB Comment # 7

- The cost of redundant VOC treatment systems for the existing interim ROD ground water treatment systems is a significant additional cost. Considering that the state DHS Policy Memo 97-005 that requires redundancy is not an ARAR, the board is concerned with the cost of choosing to comply with this policy. The board recommends that the region reevaluate the need for the degree of redundancy required by the state policy. The region should use sound engineering practice considering the need for reliability, cost-effectiveness, and other factors in deciding on the degree of redundancy needed.

Region 9 Response

Region 9 has evaluated DHS Policy Memo 97-005 as it applies to the interim remedial action for the SEMOU. Region 9 has determined that although DHS Policy Memo 97-005 is not an ARAR for the SEMOU, its requirements must be met by water purveyors who serve the treated water as drinking water. Although neither EPA nor the PRPs are water purveyors, DHS Policy 97-005 will need to be followed for any alternative involving distribution of treated groundwater to a water purveyor.

NRRB Comment # 8

- The board notes that the contingencies to treat perchlorate in the shallow zone and 1,4-dioxane in the intermediate zone are estimated to cost approximately \$8.9 million and \$15.6 million, respectively. Given this high cost, the board recommends that the region remove these contingencies, especially since the ground water data show they will likely not be necessary. The board believes that, if conditions warrant, it would be more appropriate to update the selected remedy in the future. If the region chooses to include the contingencies, the board recommends that the decision documents have an expanded discussion, including clear language regarding triggers and cost.

Region 9 Response

The contingencies to extract and treat perchlorate in the shallow zone and 1,4-dioxane in the intermediate zone are no longer being considered.

cc: M. Cook (OSRTI)
E. Southerland (OSRTI)
S. Bromm (OSRE)
J. Woolfod (FFRRO)
Rafael Gonzalez (OSRTI)
Elizabeth Adams, Region9
Kathleen Salyer, Region 9
Bella Dizon, Region 9
NRRB members